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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,586	10/24/2003	Yorimichi Dairoku	45934	6944

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EXAMINER

BERNSHTEYN, MICHAEL

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/691,586	Applicant(s) DAIROKU ET AL.	
	Examiner Michael Bernshteyn	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-5 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date <u>10/24/03</u></p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
 Paper No(s)/Mail Date. ____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: ____</p> |
|---|---|

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DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-4, drawn to a process for production of a water-absorbent resin, classified in class 526, subclass 88.
 - II. Claim 5, drawn to an apparatus for production of a water-absorbent resin, classified in class 422, subclass 129+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process for production of a water-absorbent resin can be practiced by another materially different apparatus such as polymerization vessel provided with parallel rotary stirrer shaft (GB 2146343 A) or in a polymerizer provided with a mixing head driven by liquid jet (JP56032514).
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Mr. Garrett. V. Davis on July 27, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-4. Affirmation of this election must be made by applicant in replying to this Office action. Claim 5 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Ballard et al. (U.S. Patent 3,988,509) in view of Wu et al. (U.S. Patent 6,252,016)

Ballard discloses a production process for ethylene copolymers, which comprises as a typical high-pressure, stirred reactor, free radical-initiated, continuous polymerization process in which the benefits of the invention can be realized as illustrated in the Figure. (col.3, lines 46-68 and col. 4 lines 1-2). Feed stream 1 consists essentially of about 5-20 weight percent (preferably about 10-15 weight percent) of fresh monomer makeup stream 2, about 80-95 weight percent of recycled unreacted monomer streams 3 and 12 and initiator stream 4. **Monomer makeup stream 2 is a mixture of ethylene with one or more copolymerizable monomers** (such as vinyl acetate) and accordingly, unreacted monomer stream 3 will contain ethylene and unreacted comonomer. Initiator stream 4, comprising a solution of a conventional reaction initiator...suitable for the temperature at which the polymerization is being run, is injected into **the feed stream at the entrance to reactor 5**. Feed stream 1 enters

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reactor 5 at a temperature substantially lower (usually 100 C, or more below reaction temperature) than that at which the polymerization is run.

According to Ballard et al., the concentration of the monomers is about 30-50 weight percent less than 30 weight % (col. 26, lines 53-54), and the monomer components as feeding into the polymerization reactor has a temperature in the range of about 0 C – 60 C. (col. 10, lines 38-40 and col. 3, lines 67-68).

Ballard does not disclose to use premixing in a supply pipe line to which the monomer liquid is continuously supplied to continuously stir the monomer liquid in the supply pipe.

Wu discloses a continuous process for preparing polymers which includes the steps of continuously feeding a reaction mixture containing a monomer into a channel, continuously controlling the temperature of the channel, polymerizing the monomer in the channel and continuously removing the polymer the polymer from the channel. Wu discloses that in cases where the monomer emulsion has the tendency to become unstable **before polymerization**, it can be pre-mixed and thus stabilized before being fed to the non-cylindrical channel. A mixer such as a static mixer or pre-mixer can be used in the process for this purpose (col. 6, lines 49-54). For all Examples, monomer emulsions were prepared by **admixing** butyl acrylate, metyl methacrylate, methacrylic acid, an anionic surfactant, an electrolyte, a chelating agent, and water **in a vessel**. **The admixture was stirred** until an emulsion was formed (col. 7, lines 11-15). In the example #1 a monomer emulsion was fed from monomer tank. **The feed tank** was equipped with a funnel, a **dip pipe**, an **agitator**, cooling capability, and a weigh scale.

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The monomer emulsion in the feed tank was constantly agitated in order **to insure homogeneity** (col.7, lines 18-23).

Furthermore, according to Cambridge Dictionaries online (www.onelook.com), vessel (tank) is a tube that carries liquids, and pipe is also a tube inside which liquid or gas flows from one place to another. Therefore, in a broad sense, there is no significant difference between vessel and pipe in the absence of pipe size defined in the claims.

Therefore, it would have been obvious to one having ordinary skilled in the art at the time the invention was made to incorporate the teaching of stirring liquid monomer of Wu into Ballard 's monomer feeding line in order to achieve good homogeneity of the liquid monomers in the supply pipe line (or tank, or vessel) for premixing of monomers before blending with the initiator.

Thus, the combination of Ballard and Wu renders claims 1-3 *prima facie* obvious in view of absent of unexpected results commensurate in scope of claims.

With regard to claim 4 it is obvious that reaching Reynolds number is reasonably presumed to be met since high agitation is taught in a reference to Wu (col.7, lines 26 and 51, col.8, lines 51).

Conclusion

Other references used but not cited in this office action include U.S. Patents 6,906,159, 6,610,798, 6,569,941, 6,228,930, 6,130,262, 5,439,991, 5,432,236,

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5,310, 833, 5,250,640, 5,202,772, 5,202,396, 4,748,219, GB2146343A, JP360055002A, JP2001247605A, JP401144404 A, JP411172460 A, JP56032514 and JP2215801 are shown on the Notice of References Cited Form (PTO-892).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
Examiner
Art Unit 1713

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07/28/2005


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